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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,160	12/14/2001	Shinichi Nonaka	011145	4237
23850	7590	02/20/2004	EXAMINER	
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006			WACHTEL, ALEXIS A	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 02/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/926,160

Applicant(s)

NONAKA ET AL.

Examiner

Alexis Wachtel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 5-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Detailed Action

Response to Amendment

2. Applicant's amendment and accompanying Remarks filed 12-18-2003 have been entered and carefully considered.

The amendment is sufficient to overcome the obviousness rejections of claims 1,2 and 4-7. Claims 2 and 4 are cancelled without prejudice. Claim 8 was not previously addressed and will be examined at this time. As a result Finality of the previous office action has been withdrawn. Applicant's arguments are rendered moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 5-8 rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,316,089 to Ohtani et al in view of US 5,847,036 to Takabatake et al.

Ohtani et al disclose a sheet form photocurable material comprising:

- (a) a polymerizable unsaturated monomer (Col 10, lines 20-22);
- (b) a polymer which is either polymethyl methacrylate or a polymer consisting mainly of methyl methacrylate units and which is compatible or swollen with the monomer (a) (Col 22, lines 11-15);
- (c) a photocuring agent (Col 3, lines 9-12);

(d) fibrous reinforcement (Col 3, lines 3-4);

(e) one or more resins selected from a (meth)acrylic polymer, an unsaturated polyester, a vinyl ester or a urethane acrylate (Col 8, lines 51-52);

wherein, the polymerizable unsaturated monomer (a) is an acrylic polymerizable monomer, and has a solubility parameter SP within a range from 8.1 to 10.0, which is calculated in accordance with a formula " $SP = \sum(G)/\text{molecular weight}$ " by using molar attraction constants G, and a content of the polymer (b) is within a range from 10 to 50 parts by weight, relative to 100 parts by weight of the polymerizable unsaturated monomer (a). The Examiner wishes to note that the Applicant aptly demonstrates that methyl methacrylate has a solubility parameter SP value of 8.34 (Specification on pp.5 and 6) which is the same material used as the polymerizable unsaturated monomer by Ohtani et al per the above disclosure.

A photocurable sheet-form material wherein the polymer (b) is included in an amount of 1 to 100 parts by weight, relative to 100 parts by weight of the polymerizable unsaturated monomer (a) (Col 10, lines 10-15).

A layered molding made of a laminate of a thermoplastic resin sheet and a photocurable sheet-form material (Col 28, lines 5-38).

A method of reinforcement, including a step of using a photo-curable sheet-form material according to claim 1 on a surface of a molded article (Col 28, lines 5-38).

Per claims 1 and 8, Ohtani et al fail to teach that polymer (polymethyl methacrylate) (b) is produced in a powdered form having a weight average molecular weight of 100,000 or more or that polymethyl methacrylate is produced in an emulsion

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form by an emulsion polymerization method. Yakabatake et al is directed to (meth)acrylic molding material and teaches a (meth)acrylic polymer that is preferable made of methyl methacrylate monomers. The (meth)acrylic polymer can be made by emulsion polymerization. The (meth)acrylic polymer can have a weight average molecular weight of between 30,000 and 1,000,000 (Col 4, lines 27-42). Since Ohtani et al teach the use of a polymethyl methacrylate polymer as does Yakabatake et al, it would seem plausible to assume that polymethyl methacrylate has the claimed weight. Additionally, in view of Yakabatake et al, it would have been obvious to one of ordinary skill at the time the invention was made to have made the polymethyl methacrylate polymer by using a well know and cost effective polymerization means such as emulsion polymerization.

Prior Art of Record

5. The prior art of record and not relied upon is considered pertinent to Applicant's disclosure. In addition, the following references are cited for disclosing various aspects of Applicant's invention:

US 6652694 B1


Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex Wachtel whose telephone number is 571-272-1455. The examiner can normally be reached on 10:30am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Glenn Caldarola, can be reached at (571)-272-1444. The fax phone number for the

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organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Glenn Caldarola
Supervisory Patent Examiner
Technology Center 1700